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Kevin J. Stein
KEVIN J. STEIN
Reg. No. 47,966
Attorney for Applicant(s)

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PATENT

#01-0017-UNI
Case #J3553(C)

3727

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jimenez et al.

Serial No.: 09/964,298

Filed: September 26, 2001

For: PROTECTIVE PACKAGING UNIT

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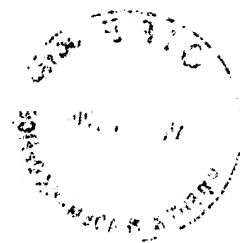
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It is respectfully requested that the priority document be made part of the file history.

Respectfully submitted,

Kevin J. Stein
Kevin J. Stein
Reg. No. 47,966
Attorney for Applicant(s)

KJS/mt
(201) 840-2394



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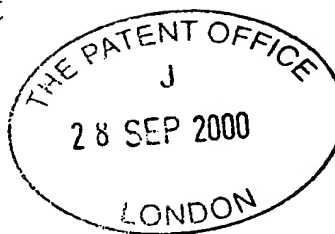
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1.	Your reference	J3553 (C)/PMK	
2.	Date: 0023798.2 (The Patent Office will fill in this part)	28 SEP 2000 29SEP00 E571932-3 002898 P01/7700 0.00-0023798.2	
3.	Full name, address and postcode of the or of each applicant (underline all surnames) Patents ADP number (if you know it) If the applicant is a corporate body, give the country/state of its incorporation	UNILEVER PLC UNILEVER HOUSE, BLACKFRIARS LONDON, EC4P 4BQ 1 628002 UNITED KINGDOM	
4.	Title of the invention	PROTECTIVE PACKAGING UNIT	
5.	Name of your agent (if you have one) "Address for Service" in the United Kingdom to which all correspondence should be sent (including the postcode) Patents ADP number (if you know it)	PEARCE, Timothy PATENT DEPARTMENT, UNILEVER PLC COLWORTH HOUSE, SHARNBROOK BEDFORD, MK44 1LQ 766757900	
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8.	Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if: a) any applicant named in part 3 is not an inventor, or b) there is an inventor who is not named as an applicant, or c) any named applicant is a corporate body. See note (d))		
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Abstract	1
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PROTECTIVE PACKAGING UNITFIELD OF INVENTION

5 This invention relates to protective packaging for consumer products contained within bottles or jars. More specifically, this invention relates to protective sheaths for consumer products and to methods for the protection of packaged consumer products using such sheaths.

10

BACKGROUND OF INVENTION

Many consumer products are supplied in bottles or jars. Often these bottles or jars are capable of being damaged during transit or on handling of the product in the warehouse, shop, or home. This is particularly true when the bottle or jar is made of a fragile material, such as glass. Methods of protecting such packaged consumer products from damage are known in the art and commonly comprise some kind of secondary packaging, such as protective boxes or sleeves. Often such secondary packaging is also used to hold several bottles or jars together in 'multi-packs'.

25 Bottles or jars often present the additional problem that their surface has a low coefficient of friction, making them difficult to grip. This is true for many glass bottles and jars, for example. The low coefficient of friction of bottles and jars is a particular problem when there is a lubricant present, either on the surface of the bottle or jar or on the consumer's hand, an example being moisture from hand perspiration. An obvious solution to this problem would be to use a material having a higher coefficient of friction; however, this is not always desirable or possible.

35

The invention described herein is, in one aspect, a method of protective secondary packaging. The method described is a significant improvement over those of the prior art, the latter methods each suffering from one or more disadvantages not common to the present invention. For example, many methods of secondary packaging make access to the contained consumer product difficult: removal of the secondary packaging being inconvenient and time-consuming for the consumer. Other methods involve secondary packaging that is torn or damaged in some other way on removal, thereby preventing its re-use. Yet other methods involve secondary packaging that entirely covers the consumer product, leading to a significant increase in the total pack cost as well as increased environmental impact.

A further problem with many packaged consumer products supplied in bottles or jars is the ease with which they can be placed on supermarket shelves facing the wrong way, resulting in their label and/or logo not being immediately visible to the shoppers. This is particularly true of packages having similarly shaped fronts and backs. Use of an asymmetric secondary packaging unit around the jar or bottle could alleviate this problem.

25 SUMMARY OF INVENTION

The present invention is concerned with the solution or at least minimisation of the above problems.

Thus, in a first aspect of the present invention, there is provided a packaged consumer product that comprises a bottle or jar and a moulded plastic sheath therefor, said sheath being closed at the top, open at the bottom, possessing a means for releasably holding the bottle or jar, and retaining its integrity upon removal of the bottle or jar.

In a second aspect of the present invention, there is provided a method for the protection from physical damage of a bottle or jar, characterised in that said method comprises surrounding the bottle or jar by a moulded plastic sheath therefor that is closed at the top, open at the bottom, possesses a means for releasably holding the bottle or jar, and retains its integrity upon removal of the bottle or jar.

DETAILED DESCRIPTION OF THE INVENTION

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The current invention offers a means of direct protection from physical damage of the top and/or sides of a bottle or jar. Protection from damage to the bottom of a bottle/jar is not normally necessary, this face usually being in contact with a solid supporting surface. For this reason, and in order to provide ease of manufacture and an easy means of removing the bottle/jar from the sheath, the protective sheath employed in the current invention is open at the bottom. Additional benefits of this element of the invention are the reduced total amount of packaging material required and the high ease of manufacture of the sheath and the sheath-bottle assembly. The opening at the bottom of the sheath makes it particularly easy for the sheath to be placed on its associated bottle/jar during product assembly. The opening at the bottom of the sheath is required to be of sufficient size for the bottle/jar to pass through it.

The bottle/jar and the associated sheath are preferably unitary items and there is preferably one sheath for each bottle/jar.

An essential element of the invention is that the sheath possesses a means of releasably holding the bottle/jar. It is essential that the sheath is able to retain the bottle/jar during normal handling, but that the bottle/jar

can be easily removed by exertion of a force that pulls it from the sheath, through the opening at the bottom.

5 It is desirable that the bottle/jar is held sufficiently firmly within the moulded plastic sheath that the assembly may be lifted, by grasping just the sheath, without the bottle/jar falling through the opening in the bottom of the sheath, even when the orientation of the assembly is such that the opening is facing towards the ground.

10

The removal of the bottle/jar from the sheath preferably does not require a great deal of force. It is desirable that said removal may be achieved by either grasping the sheath and exerting a firm downward jerk (with the assembly in a favourable orientation) or by pulling the bottle/jar from the sheath by hand. It is preferred that the force required to remove the bottle/jar from the sheath is between 15N and 30N. In all cases, the bottle/jar is removed through the opening at the bottom of the sheath.

20

The requirement that the sheath retains its integrity upon removal of the bottle or jar enables the sheath to be reused. In this context, retention of integrity refers to the maintenance of wholeness and original shape and the lack of damage or alteration. The bottle/jar may be reinserted into the sheath, through the opening at the bottom, where it may be held until its release is again desired.

30 The moulded plastic sheath is preferably resilient in nature, affording a high degree of protection to the associated bottle/jar. A contribution to the resiliency preferably comes from the outside surface sheath being hard enough to resist deformation during normal handling. The sheath is preferably moulded to have a shape that conforms to the shape of the body of the bottle/jar. The outer

35

surface of the sheath preferably has a higher coefficient of friction than that of the bottle/jar, in order to make the product easier to grip. This is particularly advantageous when the packaged consumer product is one that is generally
5 used in a high humidity environment, examples including 'bathroom' products, such as deodorants, antiperspirants, after shaves, and other cosmetic products.

The requirement that the sheath possesses a means of
10 releasably holding the bottle/jar may be met by any means or any combination of means. One means involves closely fitting the moulded plastic sheath to the bottle/jar and/or any cap associated therewith. In this way, frictional interactions between the outside surface of the bottle/jar
15 and the inside surface of the moulded plastic sheath may be sufficient to hold the former inside the latter. Alternatively, or additionally, the moulded plastic sheath may possess an element that is reversibly engaged with a cap or other part of the bottle/jar. An example of such an
20 element is an internal projection, protruding from the inside surface of the sheath, which contacts the packaged consumer product in such a way as to hold it in place. When present, such an internal projection preferably possesses a lug that is capable of contacting the underside of a
25 protruding feature, or the upper face of an indentation, present on the associated bottle/jar. Such an internal projection is preferably accompanied by a second opposing projection that is capable of contacting a point on the associated bottle/jar directing opposite from the first, the
30 two projections co-operating to firmly hold the associated bottle/jar. In a preferred embodiment, the two opposed projections protrude downwards from the top inside surface of the moulded plastic sheath and closely follow the sides of a cap upon the bottle or jar, each projection having an
35 inward facing lug at or near its bottom that is able to

reversibly slot into a cut-away section at or near the bottom of opposite sides of said cap. Such projections preferably possess sufficient structural flexibility to flex around the cap or other protruding feature present on the bottle/jar when it is inserted and when it is removed. However, the projections must also have a certain degree of rigidity, in order to hold the bottle/jar when the sheath is lifted. The rigidity of the projections can be aided by the presence of stiffening struts running along the longitudinal axis of said projections and orientated orthogonally to them.

Alternative means of releasably holding the bottle/jar within the sheath may also be envisaged. One possibility is the use of magnetic interaction, in particular magnetic interaction between the top of the bottle/jar and the top of the sheath. This could be achieved by the inclusion of a magnet within the top section of the sheath in conjunction with the inclusion of a metallic iron element within the cap of the bottle/jar, or vice-versa.

It is highly desirable that the bottle or jar comprises a cap at its top, which is also held within the moulded plastic sheath when the latter is in place. The cap preferably fits externally over the mouth of the bottle/jar and may be removed to gain access to the contents of the bottle/jar and replaced to close off access to said contents. Any means may be employed for reversibly holding the cap onto the bottle/jar, for example the cap may be screw-threaded onto a neck section of the bottle/jar. The cap preferably possesses a skirt section, external to any screw-threaded element of the cap present but connected thereto at the top of the cap. The shape of the cap skirt defines the external appearance of the cap. In a preferred embodiment, the shape is that of an arch closed at both

- front and back. In this embodiment or another, it is preferred that the cap possesses cut-away sections, preferably at or near the bottom of opposite sides of the cap, that are capable of reversibly engaging with lugs on
5 projections from the inside of the sheath, as previously described. It is preferred that the cap is made of relatively rigid plastic material, for example polypropylene or HDPE (high density polyethylene).
- 10 The moulded plastic sheath is preferably of asymmetric shape when viewed from the side. This is particularly useful when the associated bottle/jar does not itself possess such asymmetry. The front and back of the packaged consumer product are generally defined by the presence of a label or
15 logo. It is desirable that the front of such a product faces forward when present on a supermarket shelf or similar retail outlet. The presence of front-back asymmetry in the shape of the sheath aids shelf stackers (whether human or mechanical) in achieving this desirable orientation. In
20 addition, such asymmetry can aid the removal of the product from the shelf by the consumers. A preferred position for the front-back asymmetry of the sheath is at its top and/or sides; in particular, it is preferred that the highest point of the top is towards the back of the unit.
- 25 The moulded plastic sheath preferably has a cut-away section present at the front and preferably at the back also, in order that any label or logo present on the associated packaged consumer product can be clearly seen. Such cut-
30 away sections, when present at the front and back, offer the added benefit of enabling easier grasping, and hence easier removal, of the bottle/jar; this is particularly advantageous when the sheath extends to the full length of the associated bottle/jar. The cut-away sections preferably
35 extend from the bottom of the sheath to some point above

half way up the sheath, preferably to within 40% of the top of the sheath. The cut-away sections are preferably centrally located with respect to the front and/or back of the packaged consumer product, preferably occupying from 20%
5 to 80% of the breadth of the sheath, more preferably from 40% to 60%.

The shape of the moulded plastic sheath is preferably such that the dimensions decrease in the direction: top-bottom
10 height is greater than side-side breadth, which is in turn greater than front-back width. Hence a preferred shape is that of a non-cylindrical pipe which is closed at the top. It is also preferred that the dimensions of the packaged consumer product are such that the base of the bottle/jar
15 and the bottom of the moulded plastic sheath are at approximately the same height when the former is fully inserted into the latter. This latter preference aids manufacture of the complete package on line and increases the extent of protection afforded to the bottle/jar.

20 The size of the moulded plastic sheath is dependent upon the packaged consumer product with which it is associated. Preferred packaged consumer products are glass bottles and PET (polyethylene terephthalate) bottles (both usually
25 comprising caps, as previously described) containing cosmetic compositions, for example bottles of after shave, deodorant, antiperspirant, perfume, skin care treatments, hair treatments, or oral care treatments. Typical dimensions for the sheaths of such products are height: 60mm
30 to 180mm, especially 90mm to 150mm; side-side breadth: 50mm to 100mm, especially 70mm to 90mm; and front-back depth: 20mm to 60mm, especially 25mm to 40mm.

A typical thickness for the main part of the sheath wall is
35 0.7mm to 2.0mm, especially 0.9mm to 1.5mm. When a cut-away

is present in the sheath, it is preferred that the thickness of the sheath decreases towards said cutaway. A typical decrease is of the order of 50%, giving a sheath thickness of 0.35mm to 1.0mm, especially 0.45mm to 0.75mm, at the
5 junction with the cutaway.

A further preferred feature of the moulded plastic sheath is the presence of indentations in its outer sides. Such indentations can further increase the ease with which the
10 product can be removed from the shelf or be otherwise handled. Indentations are preferred to projections for this purpose because the formers do not result in the need for more shelf space for the product. The following preferences apply to the indentations: that they are of a depth no
15 greater than 50% the thickness of sheath walls, in particular from 0.3mm to 3mm, and especially from 0.5mm to 1mm; that they number from 2 to 6 per side, especially from 3 to 4 per side; that each indentation is of a maximum vertical width of from 2mm to 6mm, particularly from 3mm to
20 5mm; that they are positioned towards the centre of the sides of the sheath, preferably with their centre being within 20% of the mid-point of the top-bottom axis of the sheath; and that they are equidistant from each other, with respect to their top-bottom positioning, when more than two
25 are present.

The moulded plastic sheath may be made from any suitable polymer. Preferred polymers have a flexural modulus of 1400 to 1800 N/mm², in particular 1500 to 1700 N/mm².
30 Polypropylene and like materials are suitable; polypropylene homopolymer being particularly suitable, especially when having a flexural modulus of about 1500 N/mm². Certain additives may advantageously be included in the polymer to modify various attributes thereof. Antistatic agents are
35 one example; additives that modify the surface for tactile

or visual benefit are another. A particular example of the latter class of materials is Adflex polypropylene, which is preferably incorporated at a level of between 5 and 25% by weight. Other optional additives include materials that
5 modify the slip characteristics of the polymer, such as Dow Corning MB 50-001 siloxane polymer, which is preferably incorporated at a level of between 0.1 and 6% by weight and improves the resistance to scuffing. Resistance to scuffing is particularly beneficial during the manufacture process,
10 especially during the bringing together of the bottle/jar and the sheath (vide infra). High resistance to scuffing may also be achieved by use of polypropylene/polyethylene copolymers having a high melt flow index. A melt flow index of 80 to 100 degree/minute is typical for such materials, as
15 is a flexural modulus of 1500 to 1700 N/mm².

METHOD OF MANUFACTURE

The moulded plastic sheath can be prepared by standard
20 methods, for example injection moulding, independent of the bottle/jar. The method of manufacture of the packaged consumer product according to the invention comprises suitably orientating the bottle/jar and the pre-formed sheath relative to each other and then inserting the
25 bottle/jar into the sheath through the opening at the bottom of the sheath, until the bottle/jar and the sheath are releasably engaged. Preferred means of achieving this involve conveyer belt transport of the bottle/jar to a position underneath the sheath, followed by lowering of the
30 sheath onto the bottle/jar. Techniques such as robotic placement and rotary capping are particularly valuable.

DESCRIPTION OF DRAWINGS

The drawings illustrate a particularly preferred embodiment of the current invention. Each of the features described in the following description can be taken independently as a preferred feature of the invention as a whole.

Figures 1 to 3 illustrate a moulded plastic sheath for a bottle. Figure 1 is the front elevation; Figure 2 is a side cross-section; and Figure 3 is a horizontal cross-section near the top of the sheath.

Figures 4 to 6 illustrate the same moulded plastic sheath, together with an inserted bottle. Figure 4 is a front projection/cross-section; Figure 5 is a side projection/cross-section; and Figure 6 is a horizontal cross-section.

Figure 7 is a perspective view illustrating the position at which the bottle is partially inserted into the sheath.

The sheath illustrated in Figures 1 to 3 has a front face (1) and back face (2) that are largely flat and parallel to each other. The sides (3) are orthogonal to the front face (1) and the back face (2) and curve into both of these faces; the radius of curvature into the front face (1) being greater than that into the back face (2). The front face (1), back face (2), and sides (3) of the sheath are vertical for most of their height, although there is some curvature towards the top of the sheath (4). The bottom of the sheath (5) is entirely void space. The ratio of the height of the sheath (H) to the breadth of the sheath (B) to the width of the sheath (W) is approximately 3.7 : 2.4 : 1. The same thickness of plastic, approximately, is used to make up the front face (1), back face (2), sides (3), and top (4) of the sheath.

Cut-away sections (6f and 6b) are present in the front (1) and back (2) faces of the sheath. These cut-away sections (6f and 6b) are approximately the same size and occupy the lower central area of both front (1) and back (2) faces. They extend across approximately 50% of the breadth of the front (1) and back (2) faces (the percentage being based on the maximum breadth of the sheath), and extend from the bottom (5) of the sheath to a height (7), approximately 65% up the sheath (the percentage being based on the maximum height of the sheath). The cut-away sections (6f and 6b) each have an edge (8) that slopes away from the inside of the sheath at an angle of approximately 45°, in such a manner that dimensions of the cut-away sections (6f and 6b) are slightly greater towards the outside of the sheath.

Two projections (9) extend vertically downward from the top internal surface of the sheath (10). They have the form of rectangular walls, orientated orthogonally to the front (1) and back (2) faces of the sheath and terminate just above the height (7) of the cut-away sections (6). Relative to the sides (3) of the sheath, they are positioned slightly inside the line of the edge of each of the cut-away sections (6). Relative to the front face (1) and back face (2) of the sheath, they are centrally located and occupy approximately 50% of the depth of the sheath (the percentage being based on the maximum internal front-back depth of the sheath). The thickness of the plastic making up the projections (9) is slightly less the thickness of the plastic making up the sides (3) of the sheath.

The projections (9) each possess a lug (11) on their inside surfaces at the bottom. These lugs (11) extend horizontally across the full width of the projections (9) and have a

- 13 -

slightly convex shape when viewed from below. The lugs (11) are designed to reversibly interact with a cut-away section in the cap of a bottle, of which more is said in relation to Figures 4 and 5. Each projection (9) also possesses a
5 stiffening strut (12) on its outside surface. The stiffening struts (12) are orientated orthogonally to the projections (9) themselves, that is to say, parallel to the front face (1) and back face (2) of the sheath. They run the full length of the projections (9), along a central
10 axis, getting wider towards the top in a delta-shaped section (13), as illustrated in Figure 1.

Three indentations (14) are present in each side (3) of the sheath. These have a rectangular shape with the shorter
15 sides being outwardly curved and the longer sides being straight (when viewed as in Figure 1) and horizontal. The indentations (14) are evenly distributed approximately half way up the sheath. They penetrate into the side walls to a depth of approximately 50% with a curved cross-section.

20 The bottle (15), together with the sheath (16) into which it fits are illustrated in Figures 4 to 6. The body (17) of the bottle (15) is of a size to fit snugly within the sheath (16). Above the body (17), the bottle narrows, particularly
25 across the breadth (18) of the bottle (15), where curved shoulders (19) exist. The narrowed bottle terminates in a screw-threaded neck (20), covered by a cap (21).

The neck (20) is circular in cross-section, whilst the cap
30 (21) possesses an external skirt (22) having the shape of an arch closed at both the front and the back. The front face (23) and the back face (24) of the cap (21) are both slightly convex, when viewed from above, as illustrated in Figure 6. From the top of the cap (21), on the inside,
35 there drops a tube (25), of circular cross-section, that is

smooth on the outside and has a screw thread on the inside designed to fit the screw thread (26) on the neck (20) of the bottle. The tube (25) terminates at a point slightly below the bottom of the screw thread (26) on the neck (20) of the bottle, when the cap (21) is fully threaded onto the bottle neck (20). Centrally located within the tube (23) there exists a hollowed spike (27) that blocks the outlet hole (28) of the bottle, when the cap (21) is fully threaded onto the bottle neck (20). The spike (27) is of circular cross-section and is wider at the top than at the bottom; at the bottom its outer diameter matches that of the bottle's outlet hole (28). When the cap (21) is fully threaded onto the bottle neck (20), the spike (28) protrudes a short distance through the outlet hole (28) of the bottle.

Particularly relevant features of the cap (21) are the cut-away sections (29) present at the bottom on both sides of the cap (21). One of these cut-away sections (29) is illustrated in Figure 5. The lugs (11) present at the bottom of the projections (9) (see Figures 1 to 4) are designed to fit reversibly into these cut-away sections (29).

In addition to the aforementioned features, the bottle (15) possesses a raised central section (30) that runs from near the bottom of the bottle (15) at the front to near the bottom of bottle at the back. The front and back portions of this raised section are shaped to fit snugly within the cut-away sections (6) in the sheath (16), as illustrated in Figure 6. There are also four indentations (31) equally spaced upon each side on the bottle (15) at a position slightly below the shoulder (19). These four indentations (31) are similar in shape to the three indentations (14) in the sides of the sheath (16), although they are of different dimensions, being longer [extending from near the raised

- 15 -

section (30) at the front of the bottle to near the raised
section (30) at the back of the bottle] and narrower. They
are also more tightly spaced, the highest one being slightly
below the shoulder (19) of the bottle (15) and the lowest
5 one being approximately half way up the bottle.

CLAIMS

1. A packaged consumer product that comprises a bottle or jar and a moulded plastic sheath therefor, said sheath
5 being closed at the top, open at the bottom, possessing a means for releasably holding the bottle or jar, and retaining its integrity upon removal of the bottle or jar.
- 10 2. A packaged consumer product according to claim 1, characterised in that the outer surface of the moulded plastic sheath has a higher coefficient of friction than the outer surface of the bottle or jar contained therein.
- 15 3. A packaged consumer product according to claim 1 or claim 2, characterised in that the moulded plastic sheath is closely fitted to the bottle or jar and holds it firmly by frictional interactions between the
20 outside surface of the bottle or jar and the inside surface of the sheath.
- 25 4. A packaged consumer product according to any preceding claim, comprising an internal projection protruding from the inside surface of the moulded plastic sheath and contacting the bottle or jar in a manner that aids the retention of the bottle or jar within the sheath.
- 30 5. A packaged consumer product according to claim 4, comprising two opposed projections, that protrude downwards from the top inside surface of the moulded plastic sheath and closely follow the sides of a cap upon the bottle or jar, each projection having an

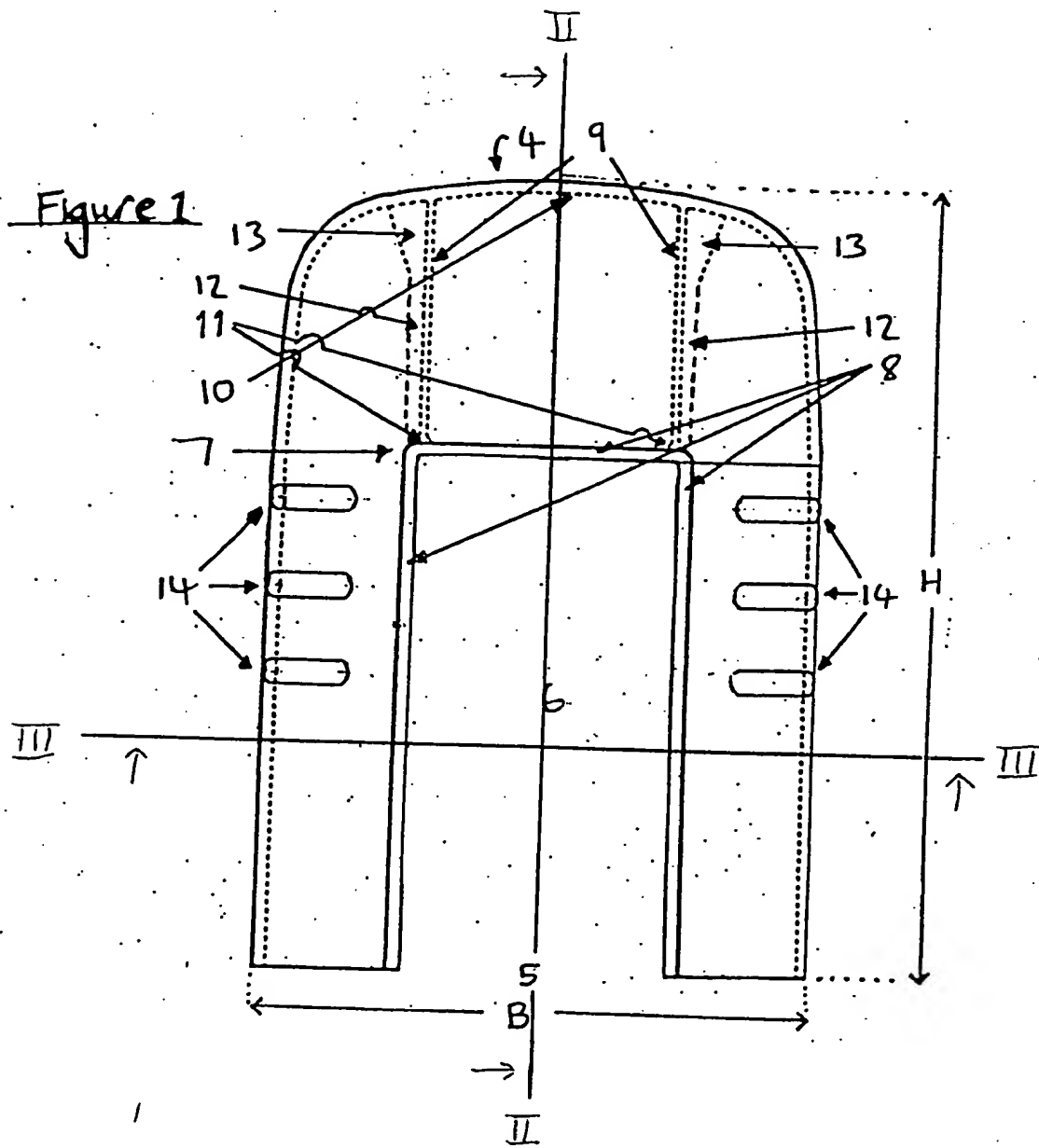
inward facing lug at its bottom that is able to reversible slot into a cut-away section at the bottom of each side of said cap.

- 5 6. A packaged consumer product according to any preceding claim, characterised in that the moulded plastic sheath is of asymmetric shape when viewed from the side.
- 10 7. A packaged consumer product according to any preceding claim, characterised in that the moulded plastic sheath extends to the full length of the associated bottle or jar and has cutaway sections present at the front and the back enabling easy grasping of the bottle or jar.
- 15 8. A packaged consumer product substantially as represented in Figures 4 to 7.
- 20 9. A method for the protection from physical damage of a bottle or jar, characterised in that said method comprises surrounding the bottle or jar by a moulded plastic sheath therefor that is closed at the top, open at the bottom, possesses a means for releasably holding the bottle or jar, and retains its integrity upon removal of the bottle or jar.
- 25 10. A method of manufacture of a packaged consumer product according to any of claims 1 to 8, comprising suitably orientating the bottle/jar and the pre-formed sheath relative to each other and then inserting the
30 bottle/jar into the sheath through the opening at the bottom of the sheath, until the bottle/jar and the sheath are releasably engaged.

ABSTRACT

A protective packaging unit for a bottle or jar is described. Said unit comprises a moulded plastic sheath
5 which is closed at the top, open at the bottom, possesses a means for releasably holding the bottle or jar, and retains its integrity upon removal of the bottle or jar. The packaged consumer product comprising the bottle or jar and the sheath is easy to assemble and to use.

Figure 1



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Figure 2

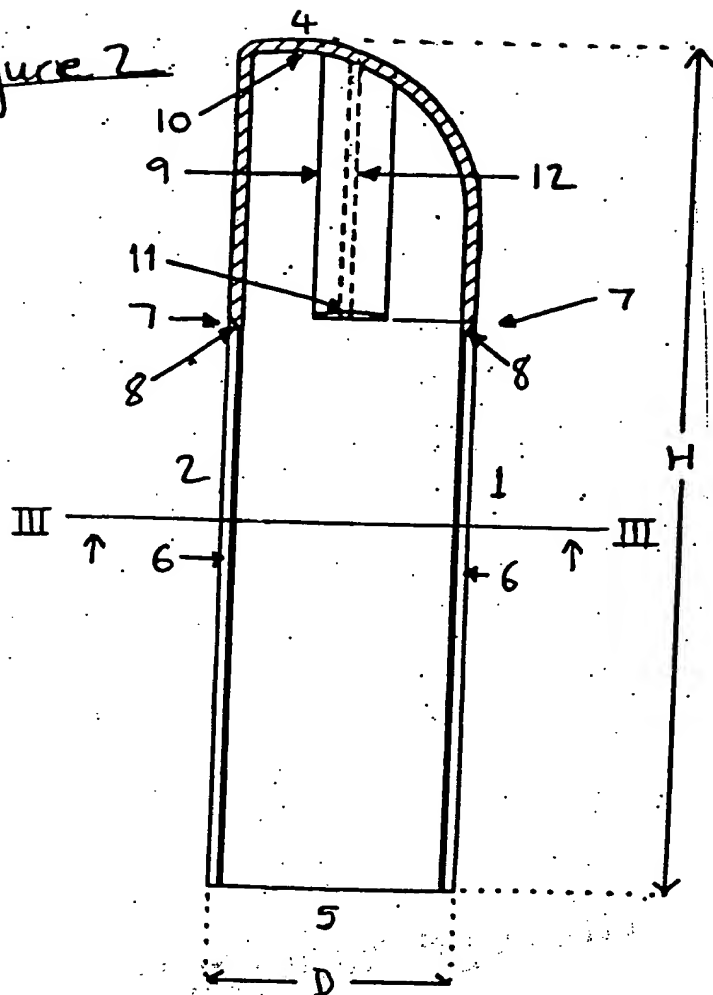
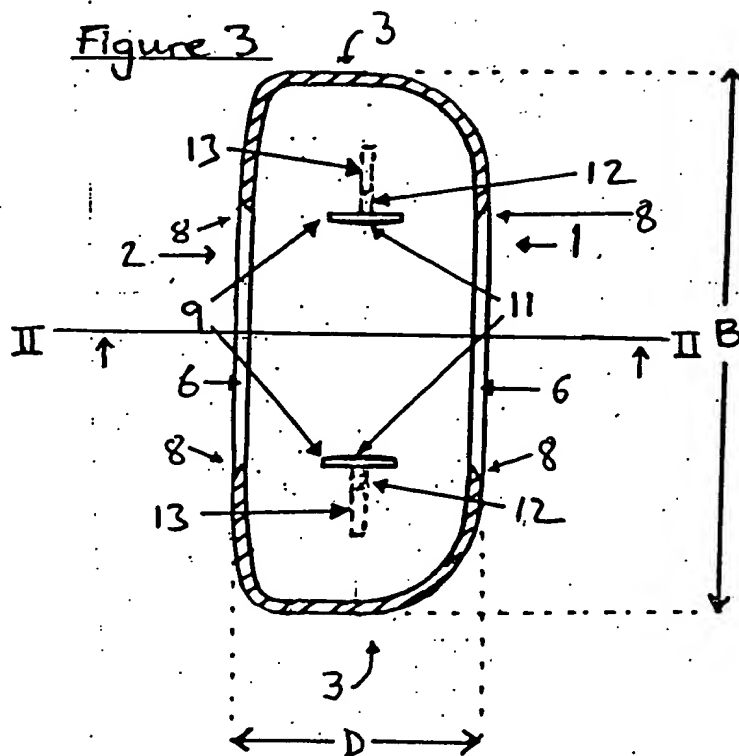


Figure 3



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Figure 4

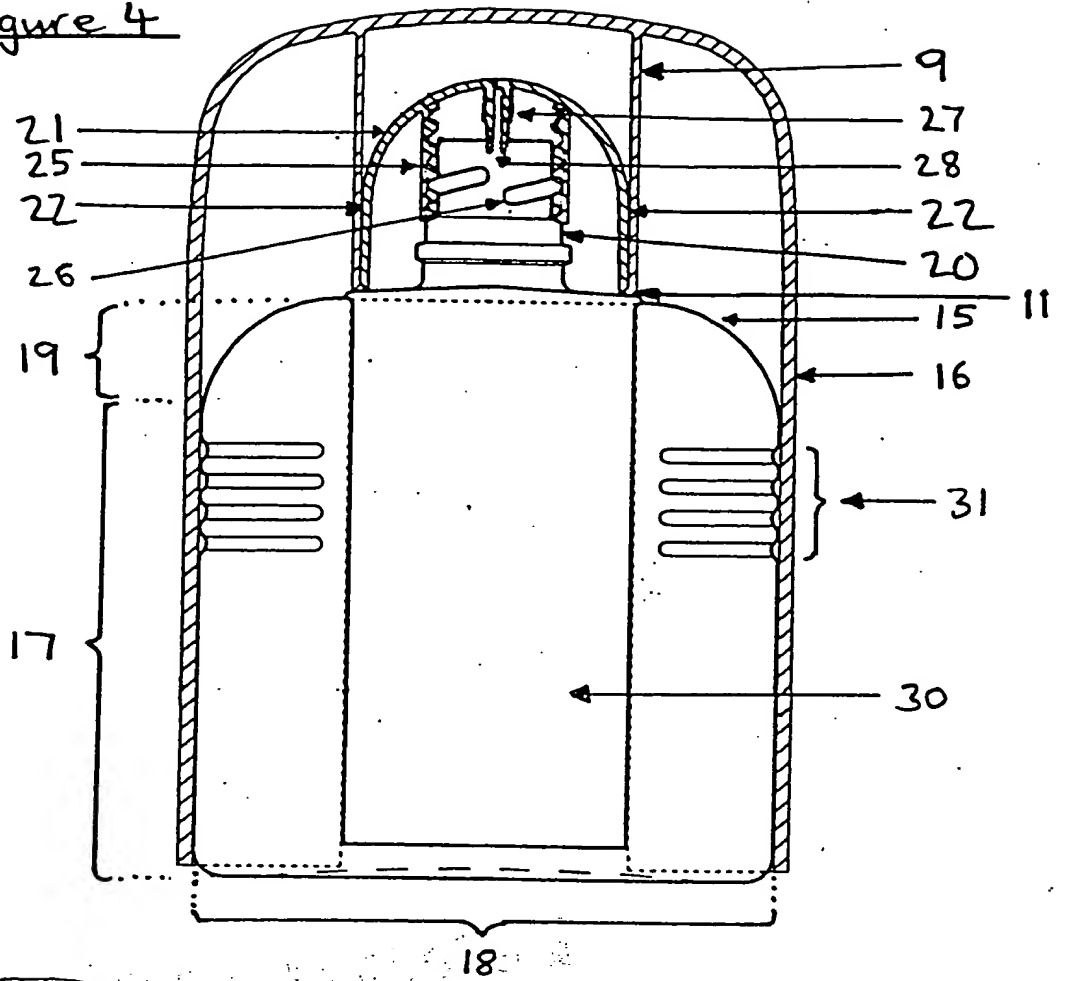


Figure 5

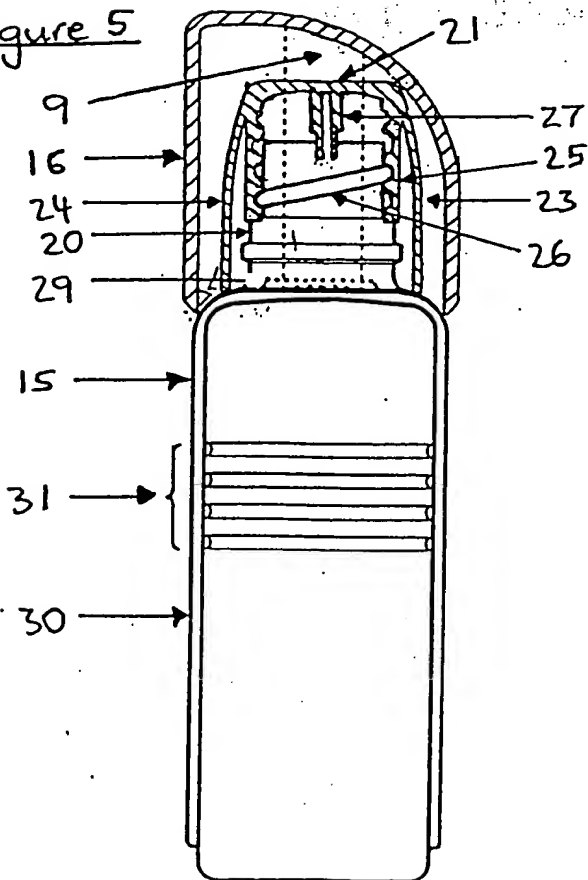
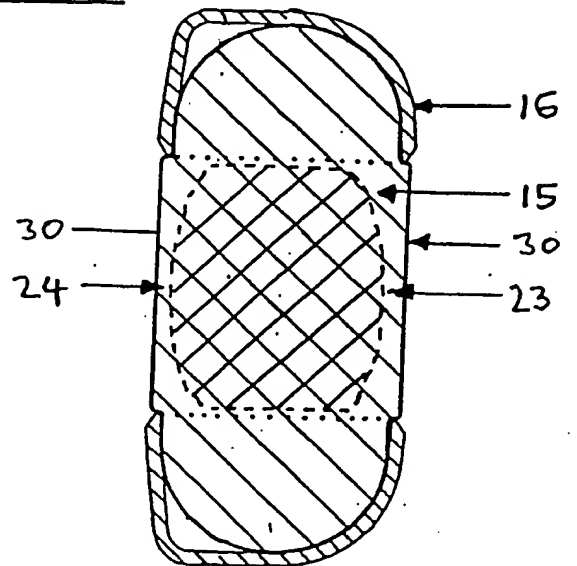
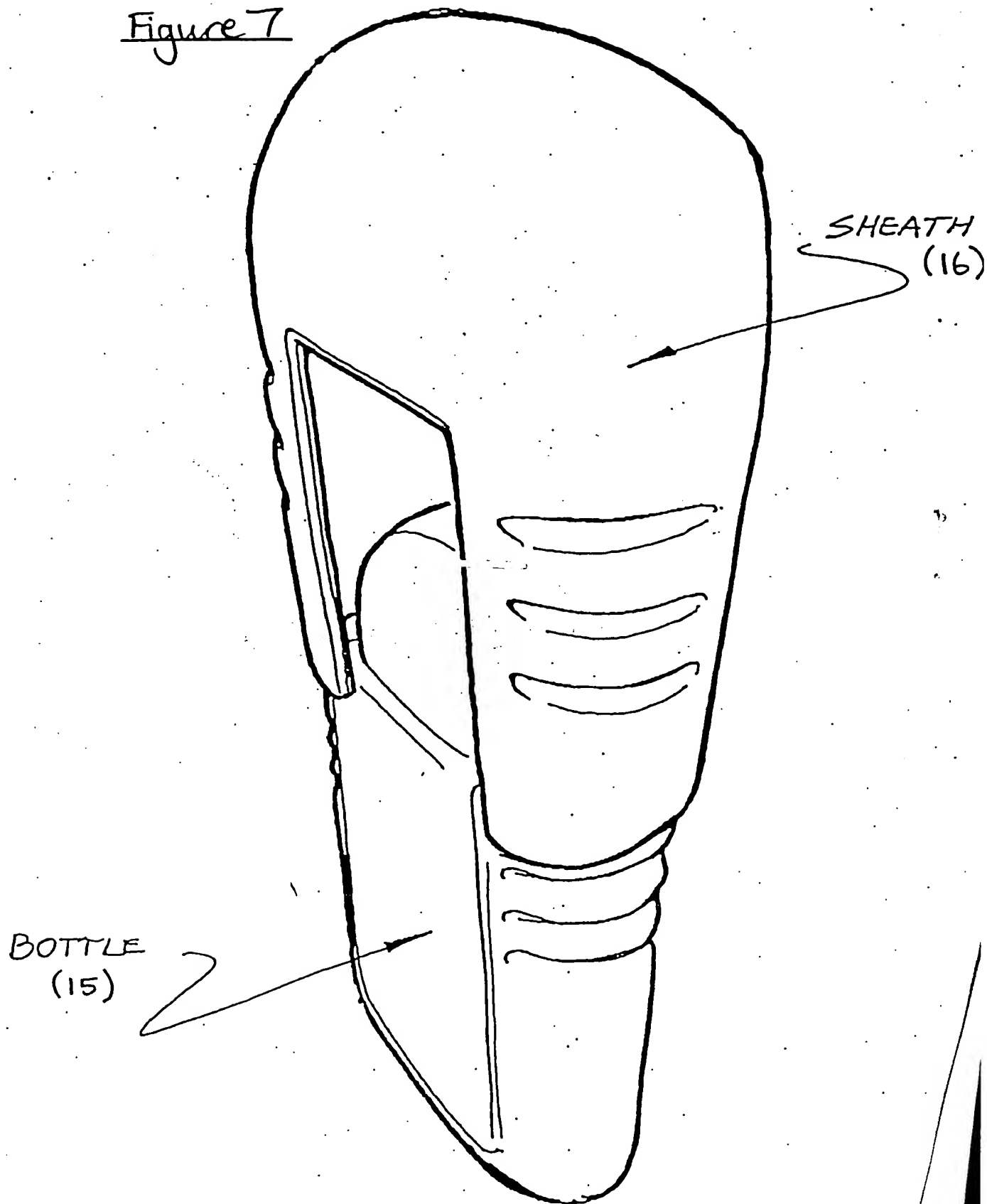


Figure 6



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Figure 7



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ATTEST:

Assistant Commissioner

Commissioner

Deputy Commissioner

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